Excellence in Science, Technology,
and Mathematics Education Week

GLOBE WWW Soil Sampling Exercise – Student Worksheet

Science Research Questions

Northern Hemisphere: Has Spring sprung in your part of the world?

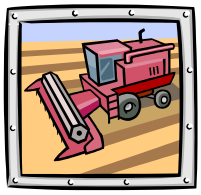
Southern Hemisphere: Has Fall finished in your part of the world?

All of the World: Is there enough soil moisture for plant growth?

Soil scientists at the United States Department of Agriculture (USDA) and the National Aeronautics and Space Administration (NASA) can record if "spring has sprung" or if "fall has finished" in your part of the world if you will collect the following information. You will then enter your data into the GLOBE Program system using GLOBE/USDA soil investigation protocols.

What will happen to the data you enter?

The USDA and NASA soil scientists will compare the information you have provided with other information from around the world, and with records from previous years, to see if Spring seems to be coming earlier or later in the year (as a trend) –OR—if winter is starting later (or earlier). In this way, your information will help to identify trends that might be related to global warming.



In a local area, USDA could use the types of data you have collected to see whether the soil is ready for a crop or tree to be planted. Crops such as soybeans and corn need a temperature of at least 13 degrees Celsius (or 55 degrees Fahrenheit) to be planted. A certain amount of soil moisture is also needed for seeds to sprout and crops to grow.

1. Changes in plant life.

Northern Hemisphere: in the space below, give a description of any flowers or leaves on the trees if they have started to bud or blossom.

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Southern Hemisphere: in the space below, record if leaves on the trees have started to change color, how much, and/or if they have started to fall to the ground.

2. Record the air temperature in degrees Celsius: _____ C

3. Dig a hole in the ground that is about 20 cm deep. In the sections below, record if the soil is dry, moist, or wet, and how many rocks you see.

Soil Moisture **(Check One)**:

_____ Soil is *wet* (drips water if squeezed

_____ Soil is *moist* (feels wet, doesn't drip if squeezed, holds shape if rolled into a ball)

_____ Soil is *dry* (doesn't feel wet, does not hold shape if rolled into a ball)

Presence of Roots **(Check One)**: _____ *None* (Can't see any roots al all)

_____ *Few* (Roots are far apart with only 5-6 small bits in handful of soil)

_____ *Many*

Presence of Rocks **(Check One):** _____ *None* Ccan't see any rocks at all)

_____ *Few* (Rocks are far apart; only 5-6 small ones—or a large one in handful of soil)

_____ *Many*

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4. Tell us what day and time it is: _____ 2002
Month Date (Day)

_____ AM PM
(Circle One)

5. Tell us where you are:

United States: _____ Zip Code

Other Country: _____ Town/Village: _____

6. Follow the **directions on the next page** to determine the texture of your soil. (Optional Activity).

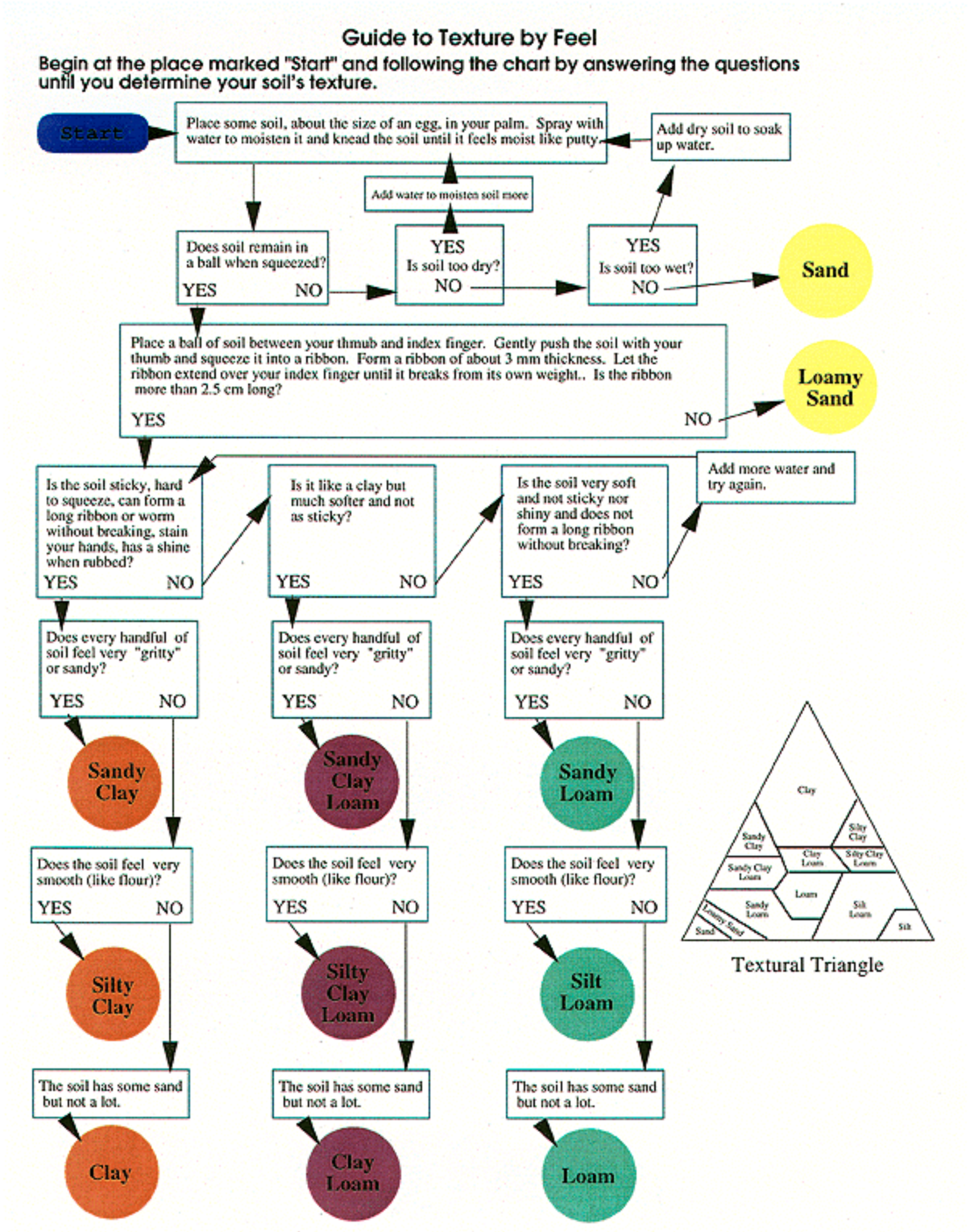
Congratulations - You are almost done!

If you do not do the optional soil texture activity on the next page, please go to the data entry portion of the web site and fill in the information you have written on this worksheet.

GLOBE, NASA, and USDA-NRCS Soil Survey all provide more information on soil sampling techniques, as well as interesting information on soils at the following web sites:

http://ltpwww.gsfc.nasa.gov/globe/index.htm
http://www.statlab.iastate.edu/soils/nssc/educ/Edpage.html
http://www.hnq.nrcs.usda.gov?CCS/squirm/skQstns.html
http://www.statlab.iastate.edu/soils/soildiv/index.html

Go to Page4 for optional soil texture activity



My soil texture is: _____

Please ***go to the data entry portion of the web site***
and fill in the information you have written on this worksheet.